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p. 41, t. VI., fig. 31; Ralfs in Prit. Infus., p. 894; Donkin, Brit. Diat., p. 73, pl. XII., figs. 6a and 6b; Brun, Diat. Alpes and Jura, p. 73, pl. VII., fig. 12; O'Meara, Rep. on the Irish Diat., p. 368, pl. 31, fig. 30; Van Heurck, Syn. Diat. Belg., pl. XII., fig. 18.

Navicula gibberula, Kutz, Bacill., p. 101, t. III., fig. 50*; Sm., Syn., Vol. i., p. 51, pl. XVII., fig. 160; Ralfs in Prit. Infus., p. 895; Schumann, Diat. der Hohen Tatra, p. 76; Brun, Diat. Alpes and Jura, p. 73, pl. VII., fig. 11; O'Meara, Rep. on the Irish Diat., p. 368; Van Heurck, Syn. Diat. Belg., pl. XII., fig. 19.

Navicula leptogongyla, Kutz., Bacill., p. 99, t. IV., fig. 9; Rabenh., Sussw. Diat., p. 41, t. V., fig. 8; Ralfs in Prit. Infus., p. 895.

Valve with triundulating margin terminating in cuneate extremities and forming three inflations, of which the central is the largest; longitudinal free space narrow and slightly expanded at the middle; striæ fine and transverse.

Hab.—Fresh water, frequent. (Plate LXIX., fig. 14.)

Kützing seems to have relied on size and outline in separating *N. gibberula* as a species distinct from *N. limosa*.—*Donkin*.

Note on the Flowers of *Populus heterophylla*, L.

It appears that the flowers of this poplar have never been fully and accurately described. Dr. Torrey, in the Flora of New York, remarks that he had not seen the staminate catkins, and there are none in his herbarium. Having recently had occasion to collect a large number of both kinds of catkins at the time when they were just mature (May 8), I made a careful examination of them, and here place my observations on record.

The staminate are from 5 cm. to 7 cm. long, oblong, 15 mm. thick; they are extremely fragile, merely shaking the tree causing them to fall to the ground in great numbers, while a hard rain was noticed to have the same effect. They do not fall away from the branch entire under such circumstances, but break off at a short distance from the base; they are borne singly on wood of the previous year a few inches from the terminal buds of the present, but rarely more than two on each twig. They are composed of numerous flowers, very densely aggregated when young, but becoming looser in the elongation of the axis. Their flowers consist of an oblique disc with spreading border, somewhat concave in the middle, which supports numerous stamens (in one 44 were counted); the anthers are oblong and obtuse, 3 mm. long by 1 mm. broad, flat on the dorsal side and provided

with a low central ridge and two slight parallel grooves on the ventral side; the filaments are capillary and nearly the length of the anthers; the staminate scales are very early deciduous, falling away as the catkin elongates in growth; they are 5-6 mm. long and about the same width, with a cuneate base abruptly expanded above and lacerated, the lateral divisions ciliate; the line of junction of the lacerated portion with the basal part is of a darker color than the base and quite conspicuous.

The pistillate catkins are from 2 to 5 cm. long when the stigmas reach a receptive condition, and this appears to be the case just as the male flowers are mature. Their flowers consist of a single pistil in a calyx about 2 mm. high and half as wide, lacerate toothed at the summit and borne on a peduncle 2 mm. long (which elongates in fruit to 15-20 mm.); the pistil is about 10 mm. high, its ovary obtusely triangular in section, with slightly concave sides and ovoid in shape, provided with three broad, parietal placentæ, and containing many ovules; the style is slender and 2 mm. long; the stigma at first appears irregularly ridged, is 5 mm. across, and very fleshy, but not glutinous, and soon parts into three lobes, each of which is two or three-lobed, forming a quite complex structure. The pistillate scales are attached near the base of the peduncle, are 8-10 mm. long, concave around the flower, and provided with small lobes just above the stalk-like, flat base, and are ciliate all around, except the lower portion below these lobes. These scales are also fugacious, falling off with the slightest shock.

A correction must be made in Dr. Watson's "Notes on American Poplars," in Amer. Journ. Sci., Vol. xv., 1878, where *P. heterophylla* is grouped with *P. tremuloides*, Michx., and *P. grandidentata*, Michx., "styles two, with two or three narrow or filiform lobes." The style-lobes are dilated, and three in number. My specimens were obtained near Court House Station, Staten Island, where the tree is quite abundant on the borders of swamps. I will gladly supply both kinds of flowers to those who care for them, and will collect mature fruit and leaves for distribution later in the season.

N. L. BRITTON,

COLUMBIA COLLEGE, May 10, 1887.